Document ID:

10790

Incoming Magnet Repair Inspection/Survey

318898 / Rev. D

Job No: **442**

MSD Project/Task No.: **30/30.13.4.6**

M + S Project/Task No.: **30/30.13.4.6**

Place This Side Down For Scanning!!!

Rework/Inspection Travelers

LNQB2503-0

Document ID: 

10790

Job No.: 

442

Project/Task No. 

30/30.13.4.6

Series: 

LNQB

Serial No: 

LNQB2503

Rework ID: 

0

Specification No.: 

318898

Revision: 

D

LNQB2503-0

Fermi National Accelerator Laboratory
Batavia, IL 60510

Conventional Magnet/Device Incoming Magnet Repair Inspection/Survey

Reference Drawing(s):

Project # Task #: *30/30.13.4.6*	**Job #:** *442*
Released by: *Jan Szal*	**Magnet/Device Series:** *LNQB*
Date: *2/3/2009 4:03:41 PM*	**Scan Pages:** 13

Prepared by: B.Jensen

Title	Signature	Date
TD / Process Engineering	***Bob Jensen*** **Bob Jensen / Designee**	**12/5/07**
TD / E&F Assembly Supervisor	***Dan Smith*** **Dan Smith / Designee**	**12/5/07**
TD / E&F Production Physicist	***George Velev*** **Gueorgui Velev / Designee**	**12/5/07**

Revision Page

Revision	Step No.	Revision Description	TRR No.	Date
None	N/A	Initial Release	N/A	6/30/95
A		Transferred from Mac to PC format.	0945	2/3/00
	3.2	Inserted a Radiation and Lead Paint Survey.		
		Changed cover page approval list.		
B	Cover	Corrected spelling of Devise to Device.	1231	9/18/01
	4.2	Add a no 'Removal/Replacement.. check box.		
	4.5	Changed 'No Damage Noted' to 'If No Damage is noted, check no damage box. Added check box		
	4.6	Added a no water path check box, added if no water path, check box.		
	6.1	Add a no water path check box, added if no water path, check box.		
	6.2	Added a no water path check box, added if no water path, check box		
	8.1	Added check box, 'No MFA/CAC Action Required.'		
	10.1	Deleted step, 'O.K. to proceed' tag, not used		
C	2.2	Update DSR	1600	1/28/04
	7.2	Update DSR		
D	CvrPge	Updated to new format	1944	12/5/07
	RevPge	Updated to new format		
	2.2	Updated: Added check boxes.		
	3.0	New: Physically check all bolts holding magnet cores.....		
	5.1	Removed: Step was redundant (serial number on btm of page).		
	5.2	Added: Checkboxes to indicate Acceptable or Damaged		
	5.2	Changed: Sign-off to Inspector instead of Technician		
	5.3	Removed: Acquire previous data (data readily available OnBase)		
	7.1	Added: Upper and Lower Magnet flow check		
	7.2	Added: Upper and Lower Hydro check with Pass/Fail boxes.		
	8.2	Updated: Added check boxes		
	9.0	Updated to new format		

Ensure appropriate memos and specific instructions are placed with the traveler before issuing the sub traveler binder to production.

1.0 General Notes

1.1 White (Lint Free) Gloves (Fermi stock 2250-1800) or Surgical Latex Gloves (Fermi stock 2250-2494) shall be worn by all personnel when handling all product parts after the parts have been prepared/cleaned.

1.2 All steps that require a sign-off shall include the Technician/Inspectors first initial and full last name.

1.3 No erasures or white out will be permitted to any documentation. All incorrectly entered data shall be corrected by placing a single line through the error, initial and date the error before adding the correct data.

1.4 All Discrepancy Reports issued shall be recorded in the left margin next to the applicable step.

1.5 Personnel shall perform all tasks in accordance with current applicable ES&H guidelines and those specified within the step.

1.6 Cover the product/assembly with Green Herculite (Fermi stock 1740-0100) when not being serviced or assembled.

2.0 Parts Kit List

2.1 No Parts Kit List required.

2.2 Update DSR.

Update DSR Keywords	☑
Location	☑
Location Verified Date	☑
Status	☑
Make entry regarding work performed.	☑

Lead Person

2-4-09
Date

3.0 Magnet Safety Check prior to Truck Un-loading

3.1 Physically check all bolts holding magnet cores together are finger tight. If any bolts are loose, acquire proper dwg/torque values and Production tighten all bolts to the proper torque value.

Note: Prior to tightening the bolts, ensure that the keyway stock is installed and the cores/keyway stock are in the correct alignment position.

Record torque value N/A ft/lbs

☐ Welded Magnet, no action needed!

[signature] 2-4-09
Inspector(s) Date

N/A
Technician(s) Date

4.0 Hazard Survey

4.1 Perform a Radiation Survey and record results below. Describe Location and Level of any "HOT" spots.

_____ mR @ 1 Foot

None Radioactive

Note(s):

If device is more than Radiation Class 1, reject acceptance of the device, unless there is written authorization from the Section Head.
If written authorization is given attach to the traveler.

L Sampay
Technician(s)

2-04-09
Date

4.2 Send a sample of the paint to ES & H for lead testing, unless previously cleared by ES & H

☐ No Lead
ES & H Approved

☐ Lead Based Paint
Follow Precautions Below

NO PAINT REMOVED

N/A D.G
Technician(s)

2.5-2009
Date

5.0 Visual Inspections

5.1 Attach the "REMOVAL/REPLACEMENT/REPAIR OF A.D. COMPONETS' sheet or equivalent documentation to this traveler.

☑ No 'Removal/Replacement/Repair of A.D. Components' and/or equivalent documentation received.

Technician(s) _____ Date 2-4-09

5.2 Perform a visual inspection of the magnet/cores from the listed items below. The below list is not all inclusive. Note any damage, missing parts, or other abnormalities below, whether from the below list or not.

Note: Any damage, missing parts or other abnormalities noted should be reported to the Production Supervisor immediately, followed up by a Discrepancy Report.!

	Acceptable	Damaged	N/A
Magnet Cores	☑	☐	☐
Coil Leads/Manifold/Ceramics	☑	☐	☐
Coil Ends, Return	☑	☐	☐
Coil Ends, Lead	☑	☐	☐
Potting Cover, Lead End	☑	☐	☐
Potting Cover, Return End	☑	☐	☐
Beam Tube	☑	☐	☑
Beam Tube Flanges/Bellows	☑	☐	☑

Any recorded damage shall be specifically photographed and photos attached to this traveler.

WELDED CORES

Inspector(s) _____ Date 2-4-09

6.0 Electrical Inspection

6.1 Perform a Resistance (R), Inductance (Ls), and 'Q' electrical inspection and record the results below.

WELDED CORES!

Equipment Serial No. 32-1515 84610

	Resistance	Ls @1KHz	Q@1KHZ	Ls @100Hz	Q @ 100Hz
Upper Half					
Lower Half					
Total Magnet	51 mΩ	881 µH	2.1	1.65mH	4.3

Inspector

2-4-09
Date

6.2 Hipot the Magnet.

Equipment Serial No. AR0503

500 Volts with < 5µA	Total Magnet	Upper Half	Lower Half
Coil to Core	4.1 µA		
Coil to Beam Tube			
Core to Beam Tube			

Inspector

2-4-09
Date

6.3 Perform Ring Test at 100 Volts. Attach the Ring Test results to the back of this traveler.

Inspector

2-4-09
Date

7.0 Flow Test and Hydro

7.1 Perform a flow test at a ΔP of 60 psi and 100 psi as per the Mechanical (flow) Inspection (ES-318968)

❒ No Water Cooling Passages.

	OUTER Upper Magnet		INNER Lower Magnet		Full Magnet	
ΔP of 60 psi	9.3	gpm	9.4	gpm	X	gpm
ΔP of 100 psi	12.1	gpm	12.2	gpm	X	gpm

Note(s): Include a diagram of the water input and output test locations, and what part of the magnet is being tested.

D. Gau
Inspector

2-4-2009
Date

7.2 Perform a hydro static check of the manifold/coil system at 500 psi for 30 minutes.

❒ No Water Cooling Passages.

	OUTER Upper Magnet		INNER Lower Magnet		Full Magnet	
	Pass	Fail	Pass	Fail	Pass	Fail
500 psi/30 mins	X		X			

D. Gau
Inspector

2-5-2009
Date

8.0 Beam Tube Vacuum Inspection

8.1 Perform a vacuum leak check on the Beam Tube.

Check box if no Beam Tube is installed in the Magnet. ☒

PART NO.		SCALE UNITS BEFORE HELIUM PROBE	SCALE UNITS WHILE ENCLOSURE FLOODING	DETERMINATION OF MINIMUM DETECTABLE LEAK				
DATE TIME	OPERATOR'S LAST NAME			MDS ÷ ((Response - Bckgnd) ÷ Leak Value) = MDL				

Inspector

25-2009
Date

8.2 Update the DSR.

Update DSR Keywords ☑

Location ☑

Location Verified Date ☑

Status ☑

Make entry regarding work performed. ☑

Lead Person

2-9-2009
Date

8.3 Photograpgh the magnet, and store in OnBase.

Inspector

2-9-2009
Date

9.0 Production Complete

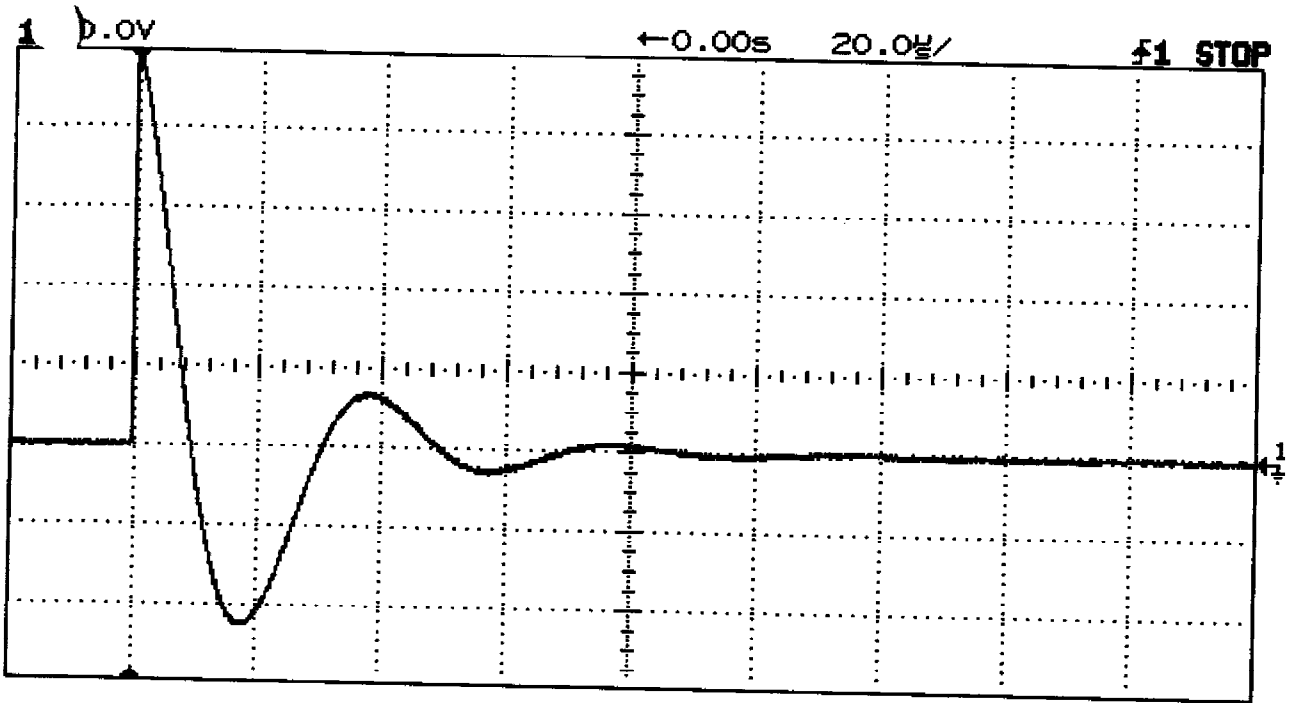
9.1 Process Engineering verify that the Traveler is accurate and complete. This shall include a review of all steps to ensure that all operations have been completed and signed off. Ensure that all Discrepancy Reports and dispositions have been reviewed by the Responsible Authority for conformance before being approved.

Comments:

Process Engineering/Designee

2-9-09
Date

09:25:37 Wed Feb 4, 2009



	State	Volts/Div	Position	Cplg	BW Lim	Inv	Probe
Chan 1	On	20.00 V	-20.00 V	DC	Off	Off	10:1
Chan 2	Off	100.0mV	0.000 V	DC	Off	Off	1:1

	Mode	Main Time/Div	Main Delay	Time Ref	Delayed Time/Div	Delayed Delay
Horizontal	Normal	20.00us/	0.000 s	Left	--------	-----

	Mode	Source	Level	Holdoff	Slope	Couplg	Reject	NoiseRej
Trigger	Normal	Ch 1	5.000 V	200.0ns	Pos	DC	HF	On

Display Mode: Normal

Traveler	318898
Step #	6.3
Magnet Serial Number	LNQB 2503-0
Technician	J. S
Page Count	1 of 1